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SOME NEW OSTRACODES FROM THE "WHITE MOUND" SECTION OF THE HARAGAN SHALE, MURRAY COUNTY, OKLAHOMA

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INTRODUCTION

The species described in this paper were collected by Dr. H. N. Coryell in the summer of 1931 from the "White Mound" section of the Haragan shale, Murray Co., Oklahoma. In addition to the Ostracodes already described by Robert Roth,² eighteen more species were identified, seventeen of which are new. These are classified in eight genera, two of which are given here for the first time.

STRATIGRAPHY

Outline showing the stratigraphic position of the Haragan shale according to the present conception.

Devonian { Oriskanian
 Helderbergian—*Haragan shale*

The Haragan shale is the basal member of the upper half of the Hunton terrane of the Arbuckle Mountains, Oklahoma, as described by Chester A. Reeds.³ He divides the Hunton into four formations on the basis of lithology and palaeontology. The bottom two divisions, the Chimneyhill limestone and the Henryhouse shale, are correlated with the Alexandrian and Niagaran beds of the Silurian respectively, and the upper two members, the Haragan shale and the Bois d'Arc limestone, are considered the equivalent of the New Scotland and Becraft of Lower Devonian age. The Haragan varies in thickness from 0-166 feet with an average thickness of about 100 feet and is not everywhere present with the other members. Reeds assigns the cause of this variation to unequal rate and time of deposition from place to place as well as to differential erosion during and following sedimentation.

The type section is the one at "White Mound," about three miles southeast of Dougherty. The formation takes its name from Haragan Creek which flows westward across the strike about one-quarter of a mile north of "White Mound."

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²Roth, Robert. 1929. 'Some Ostracodes from the Haragan Marl, Devonian of Oklahoma.' *Jour. Paleon.*, III, No. 4, p. 327.

³Reeds, Chester A. 1911. 'The Hunton Formation of Oklahoma.' *Amer. Jour. Sci.*, XXXII, pp. 256-268.

The Haragan is composed of alternating blue and white shales and thin-bedded, earthy limestones which become yellow on weathering.

On the basis of the macrofossils it has been correlated with the New Scotland of New York. It will be necessary to become acquainted with the microfossils from several other localities before one will have at command the necessary information to check the correlation on the basis of the smaller fossils. Eventually it is hoped that this will be possible.

CLASSIFICATION AND DESCRIPTION OF GENERA AND SPECIES

Family **KIRKBYIDAE** Ulrich and Bassler, 1906

Genus **KIRKBYELLA** Coryell and Booth, 1933

Kirkbyella verticalis, new species

Figure 1

Small, short, apparently equivalved, straight-hinged ostracode, subquadrangular in lateral view; dorsal margin straight; ventral margin approximately straight in middle portion, rounded at ends; posterior end bluntly rounded, anterior end with backward swing; surface covered with reticulations more oblong in ventral half and parallel to length; marked by a shallow vertical sulcus slightly posterior to the middle, extending from the dorsal margin to a subcentral pit; paralleling the ventral border is a broad swelling which narrows anteriorly and ends in a pronounced spine; running completely around the margin is a narrow, unreticulated border.

LENGTH.—0.62 mm. HEIGHT, 0.35 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24216.

Kirkbyella obliqua, new species

Figure 2

Carapace small, elongate, subquadrate in lateral view; dorsal contact straight; dorsal margin in lateral view rises above the hingeline in the anterior half; ventral margin approximately straight in the middle portion, rounded at ends; anterior end with backward swing; posterior end gently curved; surface covered with rather widely spaced pits forming a coarse series of reticulations more oblong in ventral half and parallel to the length; a shallow sulcus slightly posterior to the middle, extending obliquely from the dorsal margin to a subcentral pit, marks each valve; paralleling the ventral border is a broad swelling which narrows anteriorly and ends in a pronounced spine; running completely around the margin is a narrow, unreticulated border.

LENGTH.—0.75 mm. HEIGHT, 0.37 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24217.

This form differs from *Kirkbyella verticalis* in the more posterior position of the sulcus and more elongate form.

Family **PRIMITIIDAE** Ulrich and Bassler, 1923

Genus **BICORNELLA**, new genus

GENOTYPE.—*Bicornella tricornis*, new species

Small, inequivalved, straight-hinged ostracode, subovate in lateral view; left valve larger than right and overlapping along the free border; dorsal margin straight; ventral margin broadly convex; surface reticulate, marked by a deep sulcus in the dorsal half, on either side of which is a broad swelling which terminates in an anteriorly pointing spine; paralleling the ventral border is a broad, ill-defined swelling which terminates anteriorly in a slight spine.

Bicornella tricornis, new species

Figure 3

Carapace small, subovate with a slight backward swing; valves unequal, left larger than right and overlapping along the free border; dorsal margin straight; ventral margin convex; anterior margin curved with a slight backward swing; posterior broadly curved; surface finely and indistinctly reticulate, marked by a deep vertical sulcus in the dorsal half slightly behind the middle, on either side of which is a swelling that terminates in an anteriorly pointing spine; paralleling the ventral border is a broad, ill-defined swelling which terminates anteriorly in a slight spine.

LENGTH.—0.45 mm. HEIGHT, 0.25 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24218.

Genus **PARAHEALDIA**, new genus

GENOTYPE.—*Parahealdia pecorella*, new species

Small, apparently equivalved ostracodes, subovate in lateral view; hingeline straight; surface finely granulose or smooth, marked by a subcentral pit or sulcus and two backward pointing spines on the posterior end.

Parahealdia pecorella, new species

Figure 17

Small, elongate, apparently equivalved ostracode; dorsal border straight in middle portion, gently rounded at anterior and angulate at posterior ends; ventral border straight, curving gently at ends; anterior

rounded with ventral backward swing; dorso-posterior somewhat truncated; ventro-posterior curved; surface finely granulose, gently convex, with a pit in dorsal half slightly posterior of middle of the valve; shallow sulcus extends from the pit to the dorsal margin; near the extremities of the posterior height are two backward pointing spines, one dorsal and one ventral, connected by a distinct ridge, behind which the convexity of the valve slopes steeply to the posterior margin.

LENGTH.—0.65 mm. HEIGHT, 0.32 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24219.

***Parahealdia ovata*, new species**

Figure 18

Small, short, straight-hinged, apparently equivalved ostracode, subelliptical in lateral view; dorsal and ventral margins straight in middle portion; anterior end broadly curved; posterior dorsal margin truncated; posterior ventral end regularly curved; convexity of surface greater along ventral border; surface finely granulose, marked by a shallow pit in dorsal half, one-third height of shell from dorsal border and slightly posterior of the middle; near the posterior margin are two backward pointing spines, one dorsal and one ventral, connected by a low ridge, behind which the convexity slopes very steeply to the posterior margin.

LENGTH.—0.5 mm. HEIGHT, 0.32 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24220.

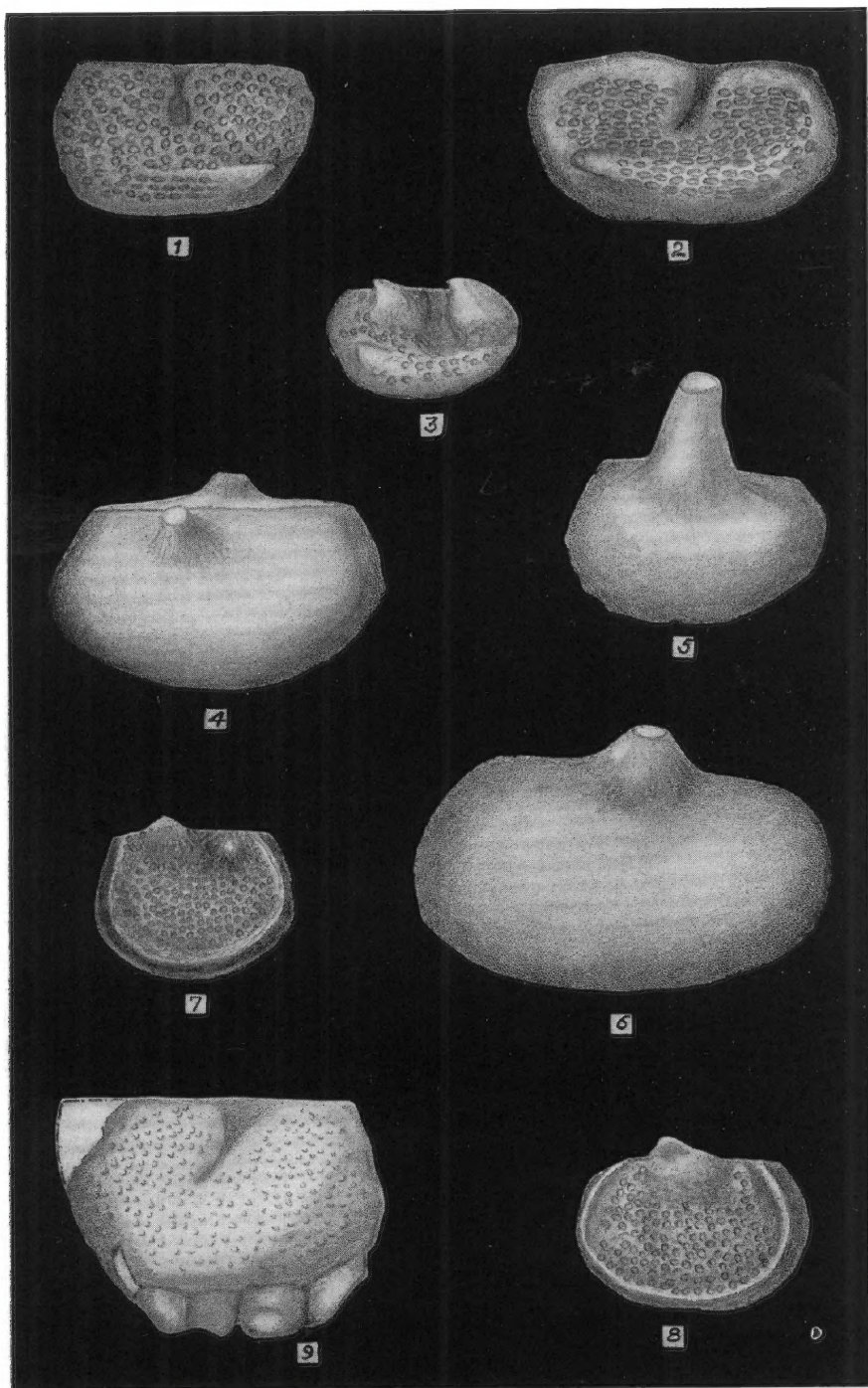
Genus ***AECHMINA*** Jones and Holl, 1869

***Aechmina truncata*, new species**

Figure 4

Small, apparently equivalved ostracode, subrhomboidal in lateral view; hingeline straight, flush with dorsal margin; dorso-anterior and posterior margins straight; ventro-anterior narrowly curved, ventro-posterior more broadly curved; ventral margin convex; anterior cardinal

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- Fig. 1. *Kirkbyella verticalis*, n. sp. Right valve. $\times 25$. A.M. No. 24216.
 Fig. 2. *Kirkbyella obliqua*, n. sp. Left valve. $\times 25$. A.M. No. 24217.
 Fig. 3. *Bicornella tricornis*, n. g., n. sp. Left valve. $\times 25$. A.M. No. 24218.
 Fig. 4. *Aechmina truncata*, n. sp. Left valve. $\times 25$. A.M. No. 24221.
 Fig. 5. *Aechmina longispina*, n. sp. Right valve. $\times 25$. A.M. No. 24222.
 Fig. 6. *Aechmina serrata*, n. sp. Right valve. $\times 25$. A.M. No. 24223.
 Fig. 7. *Ulrichia circa*, n. sp. Right valve. $\times 25$. A.M. No. 24224.
 Fig. 8. *Ulrichia reticulata*, n. sp. Right valve. $\times 25$. A.M. No. 24225.
 Fig. 9. *Ctenobolbina granosa* Ulrich. Left valve. $\times 25$. A.M. No. 24233.



angle obtuse, larger than posterior cardinal angle, causing the anterior end to project out further than the posterior; surface granulose, moderately convex with greatest convexity in posterior ventral half; blunt spine pointing upward, outward and slightly anteriorly located in front of middle near dorsal margin of each valve; greatest height a little posterior of middle; greatest length median; greatest thickness about one-third length of shell from posterior.

LENGTH.—0.92 mm. HEIGHT, 0.52 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24221.

Aechmina longispina, new species

Figure 5

Carapace subovate in lateral view with pronounced backward swing; dorsal margin straight; ventral broadly curved; greatest length median; greatest height a little posterior of the middle; greatest thickness in the posterior half of the shell; surface broadly convex with a broad-based, long spine located slightly posterior to the middle on the dorsal margin of each valve, pointing upward and somewhat anteriorly.

LENGTH.—0.62 mm. HEIGHT, 0.37 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24222.

Differs from *Aechmina geneae* Roth in general shape of carapace and greater length of spine; also in *Aechmina longispina* the base of the spine covers about one-fourth the surface of valve whereas in *Aechmina geneae* the spine is located very close to the dorsal border.

Aechmina serrata, new species

Figure 6

Carapace suboblong in lateral view; hingeline straight; ventral margin convex; anterior end gently curved with slight backward swing; posterior broadly rounded; maximum length median; maximum height and thickness in the posterior half; surface granulose, slightly convex; ornamented by a dorsal spine located in the middle of each valve and pointing upward, outward and anteriorly.

LENGTH.—1.0 mm. HEIGHT, 0.6 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24223.

Genus **ULRICHIA** Jones, 1890

Ulrichia circa, new species

Figure 7

Small, straight-hinged, equivalved ostracode, subovate in lateral view; dorsal margin straight; ventral margin broadly convex; anterior and posterior ends gently rounded; greatest height in posterior half;

greatest length one-third height of shell from ventral border; surface reticulate; marked by a small sulcus in the anterior half which slants posteriorly from the dorsal margin for a short distance; on either side of the sulcus is a node; the posterior is the larger and more prominent and extends above the dorsal margin; the anterior is smaller and situated a little below the dorsal margin; the distance from the posterior node to posterior end is twice that from the anterior node to anterior end; a false border extends around the free margin.

LENGTH.—0.50 mm. HEIGHT, 0.37 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24224.

***Ulrichia reticulata*, new species**

Figure 8

Small, straight-hinged, equivalved ostracode; dorsal margin straight; ventral convex; posterior end gently curved; posterior more acutely rounded; greatest length median; greatest height slightly posterior to the middle; surface reticulate, marked by a posteriorly directed sulcus located anterior to the middle; on either side of the sulcus is a node; the posterior is the more prominent and extends above the dorsal margin; a false border is present around the free margin.

LENGTH.—0.55 mm. HEIGHT, 0.37 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24225.

Family **BEYRICHIIDAE** Ulrich, 1894

Genus **CTENOBOLBINA** Ulrich, 1890

Ctenobolbina granosa Ulrich, 1900

Figure 9

Ctenobolbina granosa, E. O. ULRICH, Jour. Cinn. Soc. Nat. Hist., XIX, No. 6, p. 183, Pl. VIII, fig. 12. ULRICH AND BASSLER, 1908, Proc. U. S. Nat. Mus., XXXV, p. 308, Pl. XL, fig. 12.

Small, straight-hinged, equivalved ostracode, subquadrate in lateral view; dorsal margin straight; ventral margin convex; posterior end gently curved; anterior more sharply rounded; anterior cardinal angle more obtuse than the posterior; surface granulose, marked by a deeply impressed sulcus which extends from the middle of the dorsal margin to the middle of the valve and points anteriorly; extending along two-thirds the ventral border from the posterior is a frill with five scallops.

LENGTH.—0.75 mm. HEIGHT, 0.55 mm.

PLESIOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24233.

Family **THLIPSURIDAE** Ulrich, 1900

Thlipsuridae, E. O. ULRICH in Eastman-Zittel, 1900, 'Textbook of Palaeontology,' p. 645. JONES, 1887, Ann. Mag. Nat. Hist., Ser. 5, XIX, p. 403, used the group word *Thlipsurae* and did not use the family name as commonly credited to him.

Genus **THLIPSURELLA** Swartz, 1932**Thlipsurella putea**, new species

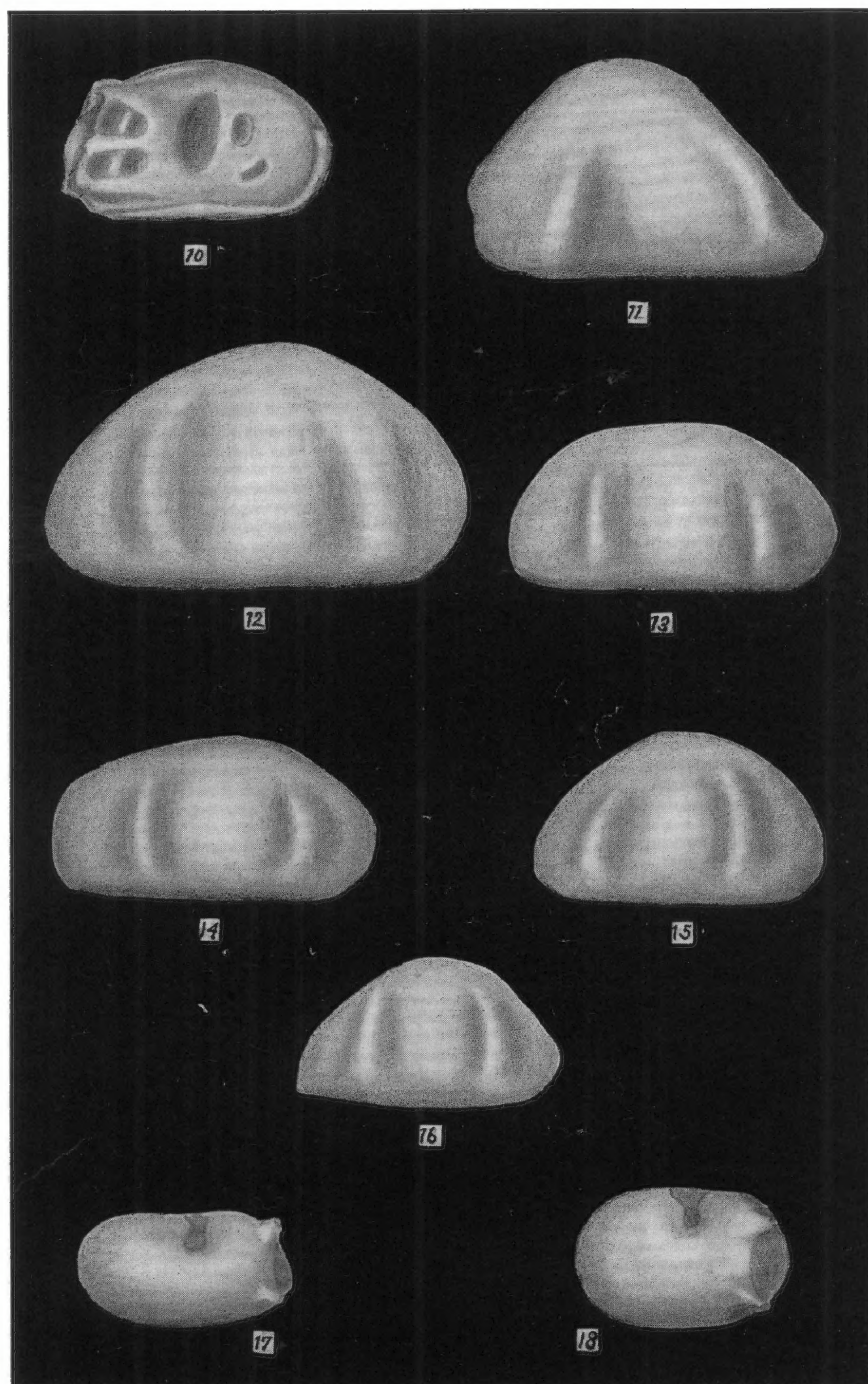
Figure 10

Carapace thick, subreniform in lateral view, subolong in dorsal view; dorsal margin strongly arched; ventral margin slightly concave; anterior end bluntly curved; posterior end a little more angulate; overlap small, the right valve overlapping the left along the entire margin; greatest height in front of the middle, greatest length nearer ventral than dorsal margin; greatest thickness in the anterior half; surface of valves granulose, convexity centrally flattened, abruptly elevated in front, descending more steeply to the ventral than to dorsal and posterior margins; marked by a deeply impressed, nearly vertical median furrow that extends from a little below the middle of the valve to about one-fourth the distance below the dorsal margin, where a short shallow extension of the cleft suddenly flares forward; anteriorly there is a system of four, subquadrangularly arranged, deep pits, each horizontal pair being noticeably confluent, the ridge between the two pairs more strongly elevated; anterior pits are larger than posterior; surface surrounding the pits forms a continuous rim which is curved except anteriorly where it is straight, running back obliquely from ventral to dorsal; anterior extremities of curved portion of rim end in short, blunt spines, one dorsal and one ventral; behind the median sulcus are two smaller pits, the long direction of the ventral one paralleling the posterior ventral border, while the long axis of the dorsal one is nearly vertical; a narrow flange occurs along the margin except on the anterior dorsal portion; the flange is more pronounced on the posterior end.

LENGTH.—0.67 mm. HEIGHT, 0.37 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24226.

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- Fig. 10. *Thlipsurella putea*, n. sp. Left valve. $\times 25$. A.M. No. 24226.
Fig. 11. *Condacypris acuminata*, n. sp. Left valve. $\times 20$. A.M. No. 24227.
Fig. 12. *Condacypris arcuata*, n. sp. Right valve. $\times 16$. A.M. No. 24228.
Fig. 13. *Condacypris parallela*, n. sp. Right valve. $\times 10$. A.M. No. 24229.
Fig. 14. *Condacypris elongata*, n. sp. Right valve. $\times 10$. A.M. No. 24230.
Fig. 15. *Condacypris hemispherica*, n. sp. Left valve. $\times 10$. A.M. No. 24231.
Fig. 16. *Condacypris similis*, n. sp. Right valve. $\times 10$. A.M. No. 24232.
Fig. 17. *Parahealdia pecorella*, n. sp. Left valve. $\times 14$. A.M. No. 24219.
Fig. 18. *Parahealdia ovata*, n. sp. Left valve. $\times 16$. A.M. No. 24220.



Family **CYPRIDAE** Baird, 1849Genus **CONDRACTYPRIS** Roth, 1929

Condrectypris, ROBERT ROTH, 1929, Jour. Paleontology, III, No. 4, p. 370.

GENOTYPE.—*Condrectypris binoda* Roth (here designated), 1929, Jour. Paleontology, III, No. 4, p. 370, Pl. xxxviii, fig. 28a (not 28b, c).

General outline subtriangular to subrectangular in lateral view; inequivalved, the left overlapping the right slightly; dorsal margin arcuate; ventral border straight or slightly concave, surface ornamented by two transverse ridges on each valve, extending from the dorsal margin nearly to the ventral and converging dorsally.

In orienting the species of this genus, the maximum height has been placed anteriorly as in Roth's discussion of *Condrectypris binoda*.

Condrectypris acuminata, new species

Figure 11

Carapace subtriangular in lateral view; dorsal margin arcuate, sloping steeply in anterior half; postero-dorsal depressed and truncated; ventral margin slightly concave; anterior end narrowly rounded; posterior subacuminate; greatest height slightly anterior to the middle; greatest length just above the ventral margin; surface marked by two transverse ridges converging toward dorsal margin, the anterior situated about one-fourth and the posterior about one-fifth the length of shell from the respective ends; anterior ridge appears the longer as the posterior converges dorsally with the truncated margin; ridges die out before reaching either dorsal or ventral margins.

LENGTH.—1.4 mm. HEIGHT, 0.85 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24227.

Condrectypris arcuata, new species

Figure 12

Carapace subtrapezoidal in lateral view; dorso-posterior and anterior margins arched in broad curve; ventral margin straight, slightly depressed in region of maximum height; antero-ventral bluntly curved; postero-ventral angulated; maximum height somewhat anterior of middle; maximum length very close to ventral border; maximum thickness in posterior half; surface marked by two transverse ridges which converge dorsally, neither ridge meeting dorsal or ventral margin; posterior ridge occurs conspicuously further from the posterior border than the anterior from the anterior border and has the greater dorsal extension.

LENGTH.—1.6 mm. HEIGHT, 0.92 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24228.

***Condracypris parallela*, new species**

Figure 13

Carapace elongate, subtrapezoidal in lateral view; dorsal margin broadly arched, dipping more steeply anteriorly than posteriorly; ventral margin straight, slightly depressed in region of maximum height; anterior end narrowly curved; posterior end truncated dorsally and bluntly rounded ventrally, meeting the ventral margin nearly perpendicularly; greatest length almost twice the height and located in the ventral half; height of posterior end greater than that of the anterior end; surface marked by two transverse ridges which converge dorsally.

LENGTH.—1.95 mm. HEIGHT, 1.05 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24229.

Condracypris parallela differs from *Condracypris arcuata* in the length-height ratio.

***Condracypris elongata*, new species**

Figure 14

Carapace elongate, the greatest length twice the height, subquadrangular in lateral view; posterior dorsal margin nearly straight; antero-dorsal margin broadly arched; ventral margin straight; anterior end narrowly rounded; posterior end nearly vertical in a broad curve, meeting the dorsal border in a sharp curve; maximum height anterior to the middle; posterior height much greater than the anterior and slightly less than the maximum height; maximum length just below the median line; surface strongly convex, the sharpest convexity being close to the dorsal and ventral borders; marked by two transverse ridges which converge slightly dorsally.

LENGTH.—1.95 mm. HEIGHT, 0.97 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24230.

***Condracypris hemispherica*, new species**

Figure 15

Carapace short, subtrapezoidal in lateral view; dorsal margin arched; the highest point in the arch is anterior to the middle; the anterior slope is shorter and also steeper than the posterior, since the posterior height is nearly one and one-half times the anterior; ventral margin nearly straight; anterior end abruptly curved, posterior less abruptly so; maximum length close to ventral border; maximum height slightly anterior to the middle; surface is convex, with greatest con-

vexity close to dorsal and ventral borders and is marked by two transverse ridges which converge slightly dorsally.

LENGTH.—1.7 mm. HEIGHT, 1.1 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24231.

***Condacypris similaris*, new species**

Figure 16

Carapace small, subtrapezoidal in lateral view; dorsal margin arched, the highest point of arch anterior to middle; dorsal anterior slope truncated; dorsal posterior gently convex; postero-ventral contact angulated; anterior end curved at venter; ventral margin straight, slightly depressed in region of maximum height; greatest height anterior to middle; greatest length near the middle of the ventral half; surface marked by two transverse ridges which converge dorsally, posterior ridge with greater dorsal extension.

LENGTH.—1.6 mm. HEIGHT, 0.9 mm.

HOLOTYPE.—Amer. Mus. Nat. Hist. Cat. No. 24232.